

**STATEMENT BY
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**Hearing on “Commercial Space Transportation: Beyond the X Prize”
House Transportation & Infrastructure Aviation Subcommittee**

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Introduction

Chairman Mica, on behalf of the Aerospace Industries Association of America, or AIA, I wish to thank you, Representative Costello, and members of the Aviation Subcommittee for the opportunity to testify this afternoon on the evolution and the potential of the nation’s commercial space industry. AIA, whose member companies employ 607,000 engineering and production workers, has a long history in the management of space transportation and satellite issues. With more than 100 regular and 170 associate members, we operate as the largest aerospace manufacturing trade association in the United States.

I will begin with a summary of the capabilities of the U.S. commercial space satellite, launch, and tourism sectors. After this overview, I will discuss two policy developments that have affected the industry during the last year and how our competitors overseas integrate commercial space programs into their geopolitical strategies. Finally, I will close by addressing the essential relationship between the commercial space transportation industry and the nation’s air traffic control system.

Commercial Space Industry Overview

Satellite and Launch Services. Revolutionary advances in information technology have produced significant changes throughout the U.S. commercial space industry. Historically, the satellite manufacturing and launch sector depended on the Defense Department’s requirement for secure communications. Military satellites typically remained on-orbit for less than ten years, triggered high operational costs, and deployed from isolated launch facilities.

While the first commercial communications satellite, *Early Bird*, had a modest life cycle of 48 months, today’s satellites offer telecommunications and imaging services to billions of users for an average period of 15 years. The longer lifetimes of modern commercial satellites subsequently reduce launch, maintenance, and replacement costs. At the same time, the economic and social applications of these current networks have increased at a dramatic rate. Internet, cell phone, and Direct TV connections merely begin the list. Commercial satellites also enable agricultural land management, urban planning, law enforcement surveillance, and terrestrial mapping. Their applications grow as the images that they produce reveal increasing levels of detail. Older remote sensing satellites, for

example, detected items the size of bridges or roads, while upgraded systems now transmit high-resolution pictures of objects as small as a car.

American companies maintain a leading, but diminishing, role in the commercial satellite and launch markets. According to Futron, an aerospace analytical firm, U.S. bidders captured 10 of the 13 commercial satellite contracts awarded last year while two European consortia won the remainder. Over time, U.S. global market share in the industry has averaged 50 percent or higher, and supports more than 100,000 high-skilled jobs.

The launch segment, however, faces declining demand and severe competition from Western European, Russian, and Japanese launch vehicle producers. Futron reports that the total number of worldwide orbital launches fell from 89 in 1997 to 54 in 2004. For 2005, only three domestic commercial launches are currently scheduled. While global launch industry revenues have increased over the last ten years, U.S. industry revenues have declined.

During the last 15 years, the nation's "space economy" has witnessed the emergence of several privately funded ventures, many of which are now in the process of developing adaptable orbital and sub-orbital transportation platforms for tourism as well as the launching of commercial and government payloads. The key challenges for this evolving industry focus on gaining access to capital, the absence of clear human rating standards for vehicles, the management of technical risk, and regulatory uncertainty.

The newer ventures, in addition to a number of established aerospace companies, offer customers new contracting opportunities that rely on transferable technologies and commercial market demand. In the view of AIA, this approach will enhance competition and creativity to a greater extent than traditional government procurement cycles of detailed specifications for systems and components with life spans that end as contracts expire.

Space Tourism. Civilian orbital and sub-orbital travel, Mr. Chairman, holds the promise of expanding the quality-of-life improvements that American society has realized from 45 years of space exploration. Since the 1960s, products based on NASA's exploration-related technologies have included high-performance semiconductors first used by mission control personnel; automobile safety tools derived from spacecraft testing; pollution abatement devices pioneered by Shuttle emissions software; water purification monitors adapted from space life support instruments; and medical advances, such as skin burn and breast cancer treatments, that incorporate the agency's solar cell and ultrasound techniques.

A future program of extra-terrestrial travel by private customers would revitalize the nation's space industrial base and harvest even more results from microgravity research. In recent testimony before the Science Committee, one expert noted two trends concerning the business potential of space tourism: surveys indicating that approximately 60 percent of Americans would take orbital or sub-orbital trips if they

could afford them; and the estimated global consumer market of one billion people for space or science fiction media. Futron's most recent study values the public spaceflight market at more than one billion dollars per year during the next twenty years, and NASA's X-Prize competition has engendered public enthusiasm about the potential for space passenger travel.

On the economic end, industry, scholars, and government officials agree that a sustained human presence in space could lead to the discovery of light-weight manufacturing materials and new sources of clean energy. Apollo 11 astronaut and award-winning rocket designer Dr. Buzz Aldrin has also testified that a two-stage-to-orbit tourist system, with a reusable first stage, could make access to space a more affordable proposition for both public and private sector customers.

Government-Industry Cooperation

The Bush Administration's revised U.S. Space Transportation Policy (USSTP), issued last month, recognizes the changing dynamics of space transportation in directing the appropriate federal agencies to:

- "Purchase commercially available U.S. space transportation products and services to the maximum extent possible;"
- "Provide a timely and responsive regulatory environment for licensing commercial space launch and reentry activities;" and
- "Encourage and facilitate the U.S. commercial space transportation industry to enhance the achievement of national security and civil space transportation objectives, benefit the U.S. economy, and increase the industry's international competitiveness."

These directions amplify the nation's Vision for Space Exploration, announced by the President in January 2004, and the findings last spring of the independent Aldridge Commission that the private sector should have a more systematic role in space operations and exploration.

Congress also recognized the changing dynamics of space transportation late last year with the passage of the Commercial Space Launch Amendments Act of 2004 (P.L. 108-492). P.L. 108-492 consolidates all commercial space flight regulatory authority under the FAA and simplifies the licensing process for new types of reusable suborbital rockets. In codifying these reforms, the law declares that government space policies should embrace the goal of "safely opening space to the American people and their private commercial, scientific, and cultural enterprises."

Science Committee Chairman Boehlert captured the significance of P.L. 108-492 by reminding his colleagues that the legislation looked towards "the future of the U.S.

aerospace industry” since it promoted innovation in space transportation programs for both humans and cargo.

My friend and talented colleague, FAA Administrator Blakey, plans to discuss commercial space regulatory and licensing issues in more detail. AIA will actively support cooperation between industry and government to fulfill the licensing mandates of the USSTP and the policy guidance of P.L. 108-492 in the interest of supporting a flexible space industrial base. We further request the Subcommittee’s support for an equitable FAA budget that will allow the agency to execute its multiple regulatory missions.

Foreign Governments in the Commercial Space Industry

Aware of the prestige and capabilities of American space industries, China, the European Union (EU), India, and Russia support varying space programs with a similar goal: to build economic and/or military capabilities through the aggressive use of commercial launch and satellite research. In the near future, therefore, the United States will confront progressively resourceful and sophisticated foreign space industry competition.

China. Five years ago, the China National Space Administration (CNSA) released a series of ten and twenty year objectives. The more significant milestones include “an integrated Chinese military and civilian earth observation system” and “international cooperation” to procure “more advanced [space development] technology from Western countries.” By 2010, the CNSA hopes to finish upgrading its Long March family of launch vehicles and create an independent satellite navigation system. The CNSA manages most of its space programs from the 1,900-square mile Jiuquan Satellite Launch Center in northwestern China. The facility’s technicians built the first spacecraft that carried the nation’s first astronaut into orbit in October 2003.

The European Union. The EU officially charges the European Space Agency (ESA) to “mobilize public and private resources” behind space priorities because “whole sectors of human activity today depend on the use of space satellites and technologies.” Furthermore, a European Commission White Paper from November 2003 identifies space as “an opportunity” that “Europe cannot afford to miss.” The White Paper instructs the ESA to assess the contractual framework of the *Galileo* global navigation satellite network for determining the “best approach to public/private finance for future space projects.” *Galileo* has also stimulated Europe’s overall space technical competitiveness.

India. As a matter of national policy, India deploys commercial space systems to consolidate its position as a regional economic power in competition with China. The father of the Indian space program, Dr. Vikram Sarabhai, set the parameters of India’s strategy by declaring that “we do not have the fantasy of competing with the economically advanced nations in the exploration of the Moon or manned spaceflight.” In keeping with this vision, the Indian Space Research Organization recently undertook two developmental flights of a three-stage satellite launch vehicle and has activated nine “Indian National Satellites” primarily for telecommunications services.

Russia. In the post-Soviet era, Russia, like India, has decided to become a commercial space power. Unlike India, the Russian government has sought the active assistance of China in this endeavor. Last year, the third session of the Russo-Chinese Sub-Commission on Space Cooperation agreed to the long-range joint development of 13 “areas of civilian space” such as “remote space probing, space telecommunication systems, navigation, and land infrastructure.”

India and Russia in particular, Mr. Chairman, will continue to challenge U.S. industry in offering low-priced space delivery vehicles.

Air Traffic Management Modernization

AIA commends you, Mr. Chairman, and the members of the Subcommittee for your exemplary leadership in establishing the seven-agency Joint Planning and Development Office (JPDO), through Section 709 of P.L. 108-176, to accelerate the modernization of the National Airspace System (NAS).

As you know, the JPDO released its *Next Generation Air Transportation System Integrated Plan* in December. The *Plan* recognizes the critical role that a secure and upgraded NAS will play in promoting our national security and maintaining America’s global economic leadership. For civil and military users alike, it outlines the vision of a digital-based network to improve the efficiency of air transport operations.

By convening this hearing, the Subcommittee has drawn a connection between the commercial space industry and NAS modernization. Elements of the *Plan* with a potential relationship to commercial space tools include the following:

- “Providing each traveler and operator in the system the specific situational awareness they need to reach decisions through the creation of a combined information network;”
- “Reducing the impact of weather on air travel through a system-wide capability for enhanced weather observations and forecasts;” and
- “[Defining and evaluating] fundamental communications, navigation, and surveillance architecture options, such as moving to digital data links.”

Commercial space technologies, Mr. Chairman, feature a broad array of tools to meet the situational awareness requirements of the National Airspace System by providing secure, instant, and high-resolution data.

Conclusion

AIA deeply appreciates this chance to share with the Subcommittee its industrial and public policy perspectives on the commercial space transportation sector. Both the launch and satellite components in the commercial space arena can:

- Advance our ability to leverage the economic and public safety benefits of space exploration;
- Reward risk and creativity in reusable rocket and vehicle development;
- Fortify the standing of the United States as an international space power against aggressive foreign competition; and
- Support the modernization of the National Airspace System.

Thank you once again, Mr. Chairman. I will be pleased to answer any questions by members of the Subcommittee.